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S3	1207	fraud with detect$4	US-PGPUB	OR	ON	2005/10/06 15:11
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S11	8	S10 and (outlier or abnormal)	US-PGPUB	OR	ON	2005/10/06 15:52
S12	0	"6466894".pn.	US-PGPUB	OR	ON	2005/10/06 16:07
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S14	26	(statistical$4 adj (anomoly or anomaly) adj detect$5)	US-PGPUB	OR	ON	2005/10/07 13:58

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         Chan, P.K.; Fan, W.; Prodromidis, A.L.; Stolfo, S.J.;
         Intelligent Systems and Their Applications, IEEE [see also IEEE Intelligent Systems]
         Volume 14, Issue 6, Nov.-Dec. 1999 Page(s):67 - 74
         Digital Object Identifier 10.1109/5254.809570

         AbstractPlus | References | Full Text: PDF(736 KB)   IEEE JNL

🖼   2. **Survey of fraud detection techniques**
         Yufeng Kou; Chang-Tien Lu; Sirwongwattana, S.; Yo-Ping Huang;
         Networking, Sensing and Control, 2004 IEEE International Conference on
         Volume 2, 2004 Page(s):749 - 754 Vol.2
         Digital Object Identifier 10.1109/ICNSC.2004.1297040

         AbstractPlus | Full Text: PDF(1599 KB)   IEEE CNF

🖼   3. **A Web services-based collaborative scheme for credit card fraud detection**
         Chuang-Cheng Chiu; Chieh-Yuan Tsai;
         e-Technology, e-Commerce and e-Service, 2004. EEE '04. 2004 IEEE International Conference on
         28-31 March 2004 Page(s):177 - 181
         Digital Object Identifier 10.1109/EEE.2004.1287306

         AbstractPlus | Full Text: PDF(229 KB)   IEEE CNF

🖼   4. **Parallel granular neural networks for fast credit card fraud detection**
         Syeda, M.; Yan-Qing Zhang; Yi Pan;
         Fuzzy Systems, 2002. FUZZ-IEEE'02. Proceedings of the 2002 IEEE International Conference on
         Volume 1, 12-17 May 2002 Page(s):572 - 577
         Digital Object Identifier 10.1109/FUZZ.2002.1005055

         AbstractPlus | Full Text: PDF(467 KB)   IEEE CNF

🖼   5. **Neural data mining for credit card fraud detection**
         Brause, R.; Langsdorf, T.; Hepp, M.;
         Tools with Artificial Intelligence, 1999. Proceedings. 11th IEEE International Conference on
         9-11 Nov. 1999 Page(s):103 - 106
         Digital Object Identifier 10.1109/TAI.1999.809773

         AbstractPlus | Full Text: PDF(56 KB)   IEEE CNF

🖼   6.
         CARDWATCH: a neural network based database mining system for credit card fraud detecti
         Aleskerov, E.; Freisleben, B.; Rao, B.;

Computational Intelligence for Financial Engineering (CIFEr), 1997., Proceedings of the IEEE/IAFE
24-25 March 1997 Page(s):220 - 226
Digital Object Identifier 10.1109/CIFER.1997.618940

AbstractPlus | Full Text: PDF(944 KB)   IEEE CNF

7. **Credit card fraud detection with a neural-network**
Ghosh, S.; Reilly, D.L.;
System Sciences, 1994. Vol.III: Information Systems: Decision Support and Knowledge-Based Sys
the Twenty-Seventh Hawaii International Conference on
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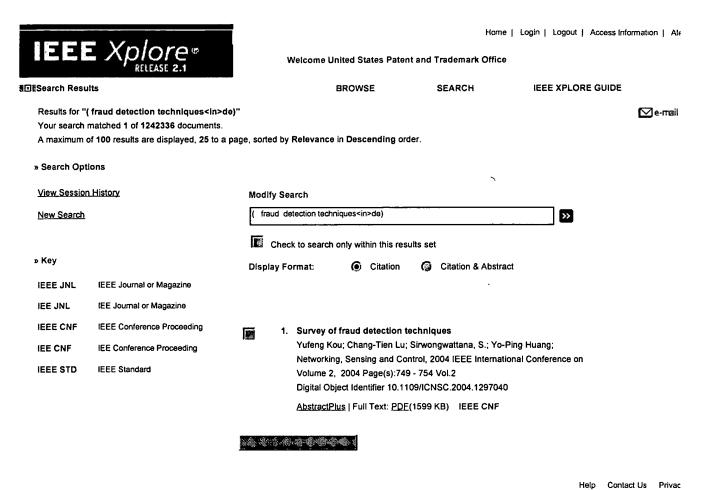
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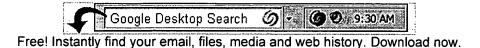
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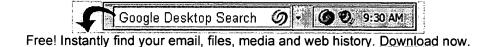... **Kenji Yamanishi**. Distributed cooperative Bayesian learning strategies. ...
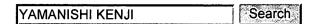theory.lcs.mit.edu/~iandc/Authors/**yamanishikenji**.html - 2k - Cached - Similar pages

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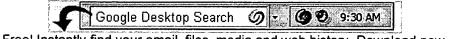... **Kenji Yamanishi**. Distributed cooperative Bayesian learning strategies. ...
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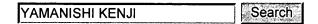
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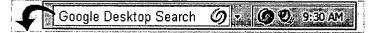File Format: PDF/Adobe Acrobat - View as HTML
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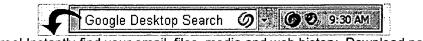portal.acm.org/citation.cfm?id=347160 - Similar pages

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Billor, **Hadi** ve **Velleman** (2000) tarafından tanımlanan **BACON** algoritması da bu
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Feature bagging for outlier detection
7 N. **Billor**, A. **Hadi** and P. **Velleman BACON**: Blocked Adaptive Computationally-Efficient
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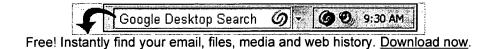File Format: PDF/Adobe Acrobat - View as HTML
multivariate **BACON** algorithm (**Billor** et al. (2000)) and we implement it in PLSR and
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             Schroeter, P.; Vesin, J.-M.; Langenberger, T.; Meuli, R.;
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             Digital Object Identifier 10.1109/89.848220

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             Hasler, D.; Sbaiz, L.; Susstrunk, S.; Vetterli, M.;
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             Volume 25, Issue 3, March 2003 Page(s):301 - 315
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Angiulli, F.; Pizzuti, C.;
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Hautamaki, V.; Karkkainen, I.; Franti, P.;
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Volume 3, 23-26 Aug. 2004 Page(s):430 - 433 Vol.3
Digital Object Identifier 10.1109/ICPR.2004.1334558

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Sheng-Yi Jiang; Qing-Hua Li; Ken-Li Li; Hui Wang; Zhong-Lou Meng;
Machine Learning and Cybernetics, 2003 International Conference on
Volume 1, 2-5 Nov. 2003 Page(s):157 - 162 Vol.1

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9. **Performance bounds for LPC spectrum quantization**
Hedelin, P.; Skoglund, J.; Samuelsson, J.;
Acoustics, Speech, and Signal Processing, 1999. ICASSP '99. Proceedings., 1999 IEEE Internatioı
Volume 2, 15-19 March 1999 Page(s):677 - 680 vol.2
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1 Industry/government track posters: Tracking dynamics of topic trends using a finite ■
mixture model
Satoshi Morinaga, Kenji Yamanishi
August 2004 **Proceedings of the tenth ACM SIGKDD international conference on
Knowledge discovery and data mining KDD '04**
Full text available: ▦ pdf(168.82 KB)   Additional Information: full citation, abstract, references, index terms

In a wide range of business areas dealing with text data streams, including CRM, knowledge
management, and Web monitoring services, it is an important issue to discover topic trends
and analyze their dynamics in real-time. Specifically we consider the following three tasks in
topic trend analysis: 1)*Topic Structure Identification*; identifying what kinds of main topics
exist and how important they are, 2)*Topic Emergence Detection*; detecting the emergence
of a new topic and recognizi ...

Keywords: CRM, model selection, text mining, topic analysis

2 Poster papers: A unifying framework for detecting outliers and change points from non- ■
stationary time series data
Kenji Yamanishi, Jun-ichi Takeuchi
July 2002 **Proceedings of the eighth ACM SIGKDD international conference on
Knowledge discovery and data mining**
Full text available: ▦ pdf(572.91 KB)   Additional Information: full citation, abstract, references, citings, index
terms

We are concerned with the issues of outlier detection and change point detection from a
data stream. In the area of data mining, there have been increased interest in these issues
since the former is related to fraud detection, rare event discovery, etc., while the latter is
related to event/trend by change detection, activity monitoring, etc. Specifically, it is
important to consider the situation where the data source is non-stationary, since the nature
of data source may change over time in r ...

3 On-line unsupervised outlier detection using finite mixtures with discounting learning ■
algorithms
Kenji Yamanishi, Jun-Ichi Takeuchi, Graham Williams, Peter Milne
August 2000 **Proceedings of the sixth ACM SIGKDD international conference on
Knowledge discovery and data mining**
Full text available: ▦ pdf(210.57 KB)   Additional Information: full citation, references, citings, index terms

4 Discovering outlier filtering rules from unlabeled data: combining a supervised learner with an unsupervised learner

Kenji Yamanishi, Jun-ichi Takeuchi

August 2001 **Proceedings of the seventh ACM SIGKDD international conference on Knowledge discovery and data mining**

Full text available: pdf(562.85 KB)   Additional Information: full citation, abstract, references, citings, index terms

This paper is concerned with the problem of detecting outliers from unlabeled data. In prior work we have developed SmartSifter, which is an on-line outlier detection algorithm based on unsupervised learning from data. On the basis of SmartSifter this paper yields a new framework for outlier filtering using both supervised and unsupervised learning techniques iteratively in order to make the detection process more effective and more understandable. The outline of the framework is as follows: In ...

5 Industry/government track posters: Mining traffic data from probe-car system for travel time prediction

Takayuki Nakata, Jun-ichi Takeuchi

August 2004 **Proceedings of the tenth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '04**

Full text available: pdf(297.21 KB)   Additional Information: full citation, abstract, references, index terms

We are developing a technique to predict travel time of a vehicle for an objective road section, based on real time traffic data collected through a probe-car system. In the area of Intelligent Transport System (ITS), travel time prediction is an important subject. Probe-car system is an upcoming data collection method, in which a number of vehicles are used as moving sensors to detect actual traffic situation. It can collect data concerning much larger area, compared with traditional fixed dete ...

Keywords: ITS, information criterion, probe-car, time series, travel time

6 Industry/government track papers: Eigenspace-based anomaly detection in computer systems

Tsuyoshi IDÉ, Hisashi KASHIMA

August 2004 **Proceedings of the tenth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '04**

Full text available: pdf(434.19 KB)   Additional Information: full citation, abstract, references, index terms

We report on an automated runtime anomaly detection method at the application layer of multi-node computer systems. Although several network management systems are available in the market, none of them have sufficient capabilities to detect faults in multi-tier Web-based systems with redundancy. We model a Web-based system as a weighted graph, where each node represents a "service" and each edge represents a dependency between services. Since the edge weights vary greatly over time, the problem ...

Keywords: Perron-Frobenius theorem, principal eigenvector, singular value decomposition, time sequence of graphs, von Mises-Fisher distribution

7 Computer security (SEC): Unsupervised learning techniques for an intrusion detection system

Stefano Zanero, Sergio M. Savaresi

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**

Full text available: 🔁 pdf(337.99 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

With the continuous evolution of the types of attacks against computer networks, traditional intrusion detection systems, based on pattern matching and static signatures, are increasingly limited by their need of an up-to-date and comprehensive knowledge base. Data mining techniques have been successfully applied in host-based intrusion detection. Applying data mining techniques on raw network data, however, is made difficult by the sheer size of the input; this is usually avoided by discarding ...

Keywords: K-means, anomaly detection, intrusion detection, principal direction divisive partitioning, quality of clusters, self-organizing maps, unsupervised clustering

8 <u>Why so many clustering algorithms: a position paper</u>
Vladimir Estivill-Castro
June 2002 **ACM SIGKDD Explorations Newsletter**, Volume 4 Issue 1
Full text available: 🔁 pdf(1.36 MB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>

We argue that there are many clustering algorithms, because the notion of "cluster" cannot be precisely defined. Clustering is in the eye of the beholder, and as such, researchers have proposed many induction principles and models whose corresponding optimization problem can only be approximately solved by an even larger number of algorithms. Therefore, comparing clustering algorithms, must take into account a careful understanding of the inductive principles involved.

Keywords: clustering, clustering criterion, inductive principle

9 <u>Research track paper: Feature bagging for outlier detection</u>
Aleksandar Lazarevic, Vipin Kumar
August 2005 **Proceeding of the eleventh ACM SIGKDD international conference on Knowledge discovery in data mining KDD '05**
Full text available: 🔁 pdf(656.54 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

Outlier detection has recently become an important problem in many industrial and financial applications. In this paper, a novel feature bagging approach for detecting outliers in very large, high dimensional and noisy databases is proposed. It combines results from multiple outlier detection algorithms that are applied using different set of features. Every outlier detection algorithm uses a small subset of features that are randomly selected from the original feature set. As a result, each out ...

Keywords: bagging, detection rate, false alarm, feature subsets, integration, outlier detection

10 <u>An effective and efficient algorithm for high-dimensional outlier detection</u>
C. Aggarwal, S. Yu
April 2005 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 14 Issue 2
Full text available: 🔁 pdf(162.48 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>

The outlier detection problem has important applications in the field of fraud detection, network robustness analysis, and intrusion detection. Most such applications are most important for high-dimensional domains in which the data can contain hundreds of dimensions. Many recent algorithms have been proposed for outlier detection that use several concepts of proximity in order to find the outliers based on their relationship to the other points in the data. However, in high-dimensional space, t ...

Keywords: Data mining, High-dimensional spaces, Outlier detection

11 <u>KM-2 (knowledge management): clustering II: A vertical distance-based outlier detection method with local pruning</u>
Dongmei Ren, Imad Rahal, William Perrizo, Kirk Scott
November 2004 **Proceedings of the thirteenth ACM conference on Information and knowledge management**
Full text available: pdf(265.46 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

"One person's noise is another person's signal". Outlier detection is used to clean up datasets and also to discover useful anomalies, such as criminal activities in electronic commerce, computer intrusion attacks, terrorist threats, agricultural pest infestations, etc. Thus, outlier detection is critically important in the information-based society. This paper focuses on finding outliers in large datasets using distance-based methods. First, to speedup outlier detections, we revise Knorr and ...

Keywords: distance-based, neighborhood search, outlier detection, p-tree, pruning

12 <u>Outlier detection for high dimensional data</u>
Charu C. Aggarwal, Philip S. Yu
May 2001 **ACM SIGMOD Record , Proceedings of the 2001 ACM SIGMOD international conference on Management of data**, Volume 30 Issue 2
Full text available: pdf(197.25 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

The outlier detection problem has important applications in the field of fraud detection, network robustness analysis, and intrusion detection. Most such applications are high dimensional domains in which the data can contain hundreds of dimensions. Many recent algorithms use concepts of proximity in order to find outliers based on their relationship to the rest of the data. However, in high dimensional space, the data is sparse and the notion of proximity fails to retain its meaningfulness. ...

13 <u>Document classification using a finite mixture model</u>
Hang Li, Kenji Yamanishi
July 1997 **Proceedings of the 35th annual meeting on Association for Computational Linguistics , Proceedings of the eighth conference on European chapter of the Association for Computational Linguistics**
Full text available: pdf(769.56 KB)
Publisher Site   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>

We propose a new method of classifying documents into categories. We define for each category a *finite mixture model* based on *soft clustering* of words. We treat the problem of classifying documents as that of conducting statistical hypothesis testing over finite mixture models, and employ the EM algorithm to efficiently estimate parameters in a finite mixture model. Experimental results indicate that our method outperforms existing methods.

14 <u>Artificial intelligence #2: Network flow for outlier detection</u>
Ying Liu, Alan P. Sprague, Elliot Lefkowitz
April 2004 **Proceedings of the 42nd annual Southeast regional conference**
Full text available: pdf(255.64 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

Detecting outliers is an important topic in data mining. Sometimes the outliers are more interesting than the rest of the data. Outlier identification has lots of applications, such as intrusion detection, and unusual usage of credit cards or telecommunication services. In this

paper, we propose a novel method for outlier identification which is based on network flow. We use the well known Maximum Flow Minimum Cut theorem from graph theory to find the outliers and strong outlier groups. Especial ...

Keywords: Maximum Flow Minimum Cut, data mining, graph theory, network flow, outlier detection

15 <u>Data mining (DM): Neighborhood based detection of anomalies in high dimensional spatio-temporal sensor datasets</u>

Nabil R. Adam, Vandana Pursnani Janeja, Vijayalakshmi Atluri
March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**

Full text available: <u>pdf(370.45 KB)</u>   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>

The behavior of spatial objects is under the influence of nearby spatial processes. Therefore in order to perform any type of spatial analysis we need to take into account not only the spatial relationships among objects but also the underlying spatial processes and other spatial features in the vicinity that influence the behavior of a given spatial object. In this paper, we address the outlier detection by refining the concept of a neighborhood of an object, which essentially characterizes sim ...

Keywords: macro neighborhood, micro neighborhood, outliers, sensors, spatial neighborhood

16 <u>Detecting graph-based spatial outliers: algorithms and applications (a summary of results)</u>

Shashi Shekhar, Chang-Tien Lu, Pusheng Zhang
August 2001 **Proceedings of the seventh ACM SIGKDD international conference on Knowledge discovery and data mining**

Full text available: <u>pdf(590.38 KB)</u>   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

Identification of outliers can lead to the discovery of unexpected, interesting, and useful knowledge. Existing methods are designed for detecting spatial outliers in multidimensional geometric data sets, where a distance metric is available. In this paper, we focus on detecting spatial outliers in graph structured data sets. We define statistical tests, analyze the statistical foundation underlying our approach, design several fast algorithms to detect spatial outliers, and provide a cost model ...

Keywords: Outlier Detection, Spatial Data Mining, Spatial Graphs

17 <u>Research track posters: Locating secret messages in images</u>

Ian Davidson, Goutam Paul
August 2004 **Proceedings of the tenth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '04**
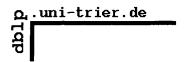
Full text available: <u>pdf(474.29 KB)</u>   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

Steganography involves hiding messages in innocuous media such as images, while steganalysis is the field of detecting these secret messages. The ultimate goal of steganalysis is two-fold: making a binary classification of a file as stego-bearing or innocent, and secondly, locating the hidden message with an aim to extracting, sterilizing or manipulating it. Almost all steganalysis approaches (known as attacks) focus on the first of these two issues. In this paper, we explore the difficult relat ...

Keywords: outlier detection, steganalysis, steganography

18 Statistical methods I: Scalable robust covariance and correlation estimates for data ☐
mining
Fatemah A. Alqallaf, Kjell P. Konis, R. Douglas Martin, Ruben H. Zamar
July 2002 **Proceedings of the eighth ACM SIGKDD international conference on
Knowledge discovery and data mining**
Full text available: 📄 pdf(899.15 KB)   Additional Information: full citation, abstract, references, index terms

Covariance and correlation estimates have important applications in data mining. In the
presence of outliers, classical estimates of covariance and correlation matrices are not
reliable. A small fraction of outliers, in some cases even a single outlier, can distort the
classical covariance and correlation estimates making them virtually useless. That is,
correlations for the vast majority of the data can be very erroneously reported; principal
components transformations can be misleading; and mu ...

Keywords: data mining, outliers, robust estimators, robust statistics, scalable algorithm

19 Detecting region outliers in meteorological data   ☐
Jiang Zhao, Chang-Tien Lu, Yufeng Kou
November 2003 **Proceedings of the 11th ACM international symposium on Advances in
geographic information systems**
Full text available: 📄 pdf(774.81 KB)   Additional Information: full citation, abstract, references, citings, index
terms

Spatial outliers are the spatial objects with distinct features from their surrounding
neighbors. Detection of spatial outliers helps reveal important and valuable information from
large spatial data sets. In the field of meteorology, for example, spatial outliers can be
associated with disastrous natural events such as tornadoes, hurricane, and forest fires.
Previous study of spatial outlier mainly focuses on point data. However, in the
meteorological data or other applications, spatial outlier ...

Keywords: meteorological data, outlier detection, spatial data mining

20 Analysis methodology: Simulation input modeling: prior and candidate models in the ☐
Bayesian analysis of finite mixtures
Russell C. H. Cheng, Christine S. M. Currie
December 2003 **Proceedings of the 35th conference on Winter simulation: driving
innovation**
Full text available: 📄 pdf(387.35 KB)   Additional Information: full citation, abstract, references

This paper discusses the problem of fitting mixture models to input data. When an input
stream is an amalgam of data from different sources then such mixture models must be
used if the true nature of the data is to be properly represented. A key problem is then to
identify the different components of such a mixture, and in particular to determine how
many components there are. This is known to be a non-regular/non-standard problem in the
statistical sense and is technically notoriously diffic ...

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Jun-ichi Takeuchi

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2005
13 EE Jun-ichi Takeuchi, Shun-ichi Amari: /spl alpha/-parallel prior and its properties. IEEE Transactions on Information Theory 51(3): 1011-1023 (2005)
2004
12 EE Takayuki Nakata, Jun-ichi Takeuchi: Mining traffic data from probe-car system for travel time prediction. KDD 2004: 817-822
11 EE Kenji Yamanishi, Jun-ichi Takeuchi, Graham J. Williams, Peter Milne: On-Line Unsupervised Outlier Detection Using Finite Mixtures with Discounting Learning Algorithms. Data Min. Knowl. Discov. 8(3): 275-300 (2004)
2003
10 EE Satoshi Morinaga, Kenji Yamanishi, Jun-ichi Takeuchi: Distributed cooperative mining for information consortia. KDD 2003: 619-624
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9 EE Kenji Yamanishi, Jun-ichi Takeuchi: A unifying framework for detecting outliers and change points from non-stationary time series data. KDD 2002: 676-681
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8 EE Kenji Yamanishi, Jun-ichi Takeuchi: Discovering outlier filtering rules from unlabeled data: combining a supervised learner with an unsupervised learner. KDD 2001: 389-394
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7 EE Kenji Yamanishi, Jun-ichi Takeuchi, Graham J. Williams, Peter Milne: On-line unsupervised outlier detection using finite mixtures with discounting learning algorithms. KDD 2000: 320-324
6 Jun-ichi Takeuchi, Naoki Abe, Shun-ichi Amari: The Lob-Pass Problem. J. Comput. Syst. Sci. 61(3): 523-557 (2000)
1998
5 Atsuyoshi Nakamura, Jun-ichi Takeuchi, Naoki Abe: Efficient Distribution-Free Population Learning of Simple Concepts. Ann. Math. Artif. Intell. 23(1-2): 53-82 (1998)
1994
4 Atsuyoshi Nakamura, Naoki Abe, Jun-ichi Takeuchi: Efficient Distribution-free Population Learning of Simple Concepts. AII/ALT 1994: 500-515
1993

3	EE	Naoki Abe, Jun-ichi Takeuchi: The "lob-pass" Problem and an On-line Learning Model of Rational Choice. COLT 1993: 422-428
	1992	
2		Jun-ichi Takeuchi: Some Improved Sample Complexity Bounds in the Probabilistic PAC Learning Model. ALT 1992: 208-219
	1991	
1	EE	Naoki Abe, Manfred K. Warmuth, Jun-ichi Takeuchi: Polynomial Learnability of Probabilistic Concepts with Respect to the Kullback-Leibler Divergence. COLT 1991: 277-289

Coauthor Index

1	Naoki Abe	[1] [3] [4] [5] [6]
2	Shun-ichi Amari	[6] [13]
3	Peter Milne	[7] [11]
4	Satoshi Morinaga	[10]
5	Atsuyoshi Nakamura	[4] [5]
6	Takayuki Nakata	[12]
7	Manfred K. Warmuth	[1]
8	Graham J. Williams	[7] [11]
9	Kenji Yamanishi	[7] [8] [9] [10] [11]

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Jun'ichi Takeuchi's Publication List

Refereed Journal Papers

1. J. Takeuchi & K. Yamanishi:
   ``A Unifying Framework for Detecting Outliers and Change Points from Non-Stationary Time Series Data," *IEEE transactions on Knowledge and Data Engineering*, to appear.
2. J. Takeuchi & S. Amari:
   ``α-Parallel Prior and Its Properties," *IEEE transactions on Information Theory*, Vol. 51, No. 3, pp. 1011-1023, March 2005.
3. K. Yamanishi, J. Takeuchi, G. Williamas, & P. Milne:
   ``On-line Unsupervised Oultlier Detection Using Finite Mixtures with Discounting Learning Algorithms," *Data Mining and Knowleged Discovery Journal*, 8 (3): 275-300, May 2004.
4. N. Abe, J. Takeuchi, & M. Warmuth :
   ``Polynomial Learnability of Stochastic Rules with respect to the KL-divergence and Quadratic Distance," *IEICE transactions (D)*, Vol.E84-D No.3 pp. 299-316, 2001.
5. J. Takeuchi, N. Abe, & S. Amari :
   ``The Lob-Pass problem," *Journal of Computer and System Sciences*, Vol. 61, No. 3, pp. 523-557, 2000.
6. A. Nakamura, J. Takeuchi, & N. Abe :
   ``Efficient distribution-free population learning of simple concepts," *Annals of Mathematics and Artificial Intelligence*, 23, pp. 53-82, 1998.
7. J. Takeuchi :
   ``Characterization of the Bayes estimator and the MDL estimator for exponential families," *IEEE transactions on Information Theory*, Vol. 43, No. 4, pp. 1165-1174, 1997.
8. J. Takeuchi :
   ``Improved sample complexity bounds for parameter estimation," *IEICE transactions (D)*, Vol. E78D, No. 5, pp. 526-531, 1995.

Refereed Conference Papers

1. J. Takeuchi & T. Kawabata:
   `` Exponential Curvature and Jeffreys Mixture Prediction Strategy for Markov Model (in Japanese)," *Proc. of the Seventh Workshop on Information-Based Induction Sciences (IBIS2004)*, 2004.
2. T. Nakata & J. Takeuchi:
   `` Learning Travel Time Prediction Function from Probe-Car Data (in Japanese)," *Proc. of the Seventh Workshop on Information-Based Induction Sciences (IBIS2004)*, 2004.
3. T. Nakata & J. Takeuchi:
   ``Mining Traffic Data from Probe-Car System for Travel Time Prediction," *Proc. of the*

tenth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, ACM Press (KDD2004), 2004.

4. S. Morinaga, K. Yamanishi, & J. Takeuchi:
``Distributed Cooperative Mining for Information Consortia,'' *Proc. of the Nineth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, ACM Press (KDD2003)*, 2003.

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6. K. Yamanishi & J. Takeuchi:
``A Unifying Framework for Detecting Outliers and Change Points from Non-Stationary Time Series Data'', *Proc. of the Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, ACM Press (KDD2002)*, 2002.

7. J. Takeuchi, T. Kawabata, & A. R. Barron:
`` Properties of Jeffreys mixture for Markov sources,'' *Proc. of the fourth Workshop on Information-Based Induction Sciences (IBIS2001)*, pp. 327-332, 2001.

8. K. Yamanishi & J. Takeuchi:
`` Discovering Outlier Filtering Rules from Unlabeled Data --Combining a Supervised Learner with an Unsupervised Learner--(in Japanese),'' *Proc. the fourth Workshop on Information-Based Induction Sciences (IBIS2001)*, pp. 111-116, 2001.

9. K. Yamanishi & J. Takeuchi:
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`` On minimax regret with respect to families of stationary stochastic processes (in Japanese),'' *Proc. of the third Workshop on Information Based Induction Sciences*, 2000.

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``Asymptotically minimax regret by Bayes mixtures,'' *Proc. of 1998 IEEE International Symposium on Information Theory*, 1998.

14. J. Takeuchi & T. Kawabata :
``Approximation of Bayes code for Markov sources,'' *Proc. of 1995 IEEE International Symposium on Information Theory*, p.391, 1995.

15. J. Takeuchi :
    ``Characterization of the Bayes estimator and the MDL estimator for exponential families," *Proc. of 1995 IEEE International Symposium on Information Theory* (long presentation), p.228, 1995.
16. A. Nakamura, N. Abe & J. Takeuchi :
    ``Efficient distribution-free population learning of simple concepts," *Proc. of the 5th International Workshop on Algorithmic Learning Theory,* pp. 500-515, 1994.
17. N. Abe & J. Takeuchi :
    ``The `Lob-Pass' problem and an on-line learning model of rational choice," *Proc. of the 7th Annual Conference on Computational Learning Theory,* pp. 422-428, 1993.
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19. N. Abe, J. Takeuchi, & M. Warmuth :
    ``Polynomial learnability of probabilistic concepts with respect to the Kullback-Leibler divergence," *Proc. of the 4th annual Workshop on Computational Learning Theory,* pp. 277-289, 1991.

Articles and other Invited Papers

1. K. Yamanishi, J. Takeuchi, Y. Maruyama:
   ``Three Methods for Statistical Anomaly Detection (in Japanese)," *IPSJ Magazine (Joho Shori),* Vol. 46, No. 1, pp. 34-40, 2005.
2. N. Abe, K. Yamanishi, A. Nakamura, H. Mamitsuka, J.Takeuchi, & H. Li:
   ``Distributed and Active Learning," The Foundations of Real-World Intelligendce, Oct. 2001.
3. J. Takeuchi & K. Yamanishi:
   `` Statistical outlier detection in data mining (in Japanese)," *Bulletin of the Japan Society for Industrial and Applied Mathnematics (Ouyou Suuri),* Vol. 10, No. 3, 2001.
4. J. Takeuchi:
   ``Asymptotically Minimax Codes by Bayes Procedures (in Japanese)," *Proc. of IEICE Society Conference,* October 1998.
5. J. Takeuchi:
   `` Stochastic complexity and Jeffreys mixture prediction strategies (in Japanese)," *Proc. of the first Workshop on Information Based Induction Sciences,* pp. 9-16, 1998.
6. A. R. Barron & J. Takeuchi:
   ``Mixture models achieving optimal coding regret," *Proc. of 1998 IEEE Inform. Theory Workshop,* 1998.

Other Conference Papers (selected)

1. J. Takeuchi & A. R. Barron:

`` Robustly minimax codes for universal data compression," *Proc. of the 21st Symposium on Information Theory and its Applications (SITA'98)*, 1998.

2. J. Takeuchi & A. R. Barron:
`` Asymptotically minimax regret for exponential families," *Proc. of the 20th Symposium on Information Theory and its Applications (SITA'97)*, pp. 665-668, 1997. **Best papers award at SITA'97.**

3. J. Takeuchi & K. Kawabata:
``On data compression algorithms by Bayes coding for Markov sources (in Japanese)," *Proc. of the 17th Symposium on Information Theory and its Applications (SITA'94)*, pp.513-516, 1994.

June 13th, 2005

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Education

1992 Ph.D. Mathematical Engineering, University of Tokyo, Japan.
Advisor: Prof. Shun-ichi Amari.
Dissertation: *A Statistical Approach to Computational Learning Theory.*

1987 M.S. Mathematical Engineering, University of Tokyo, Japan.
Advisor: Prof. Shun-ichi Amari.
Thesis: *A Study on Algebraic-Geometric Codes.* (in Japanese).

1984 B.A. Mathematical Engineering, University of Tokyo, Japan.
Advisor: Prof. Shun-ichi Amari.
Thesis: *A Geometical Approach to Theories of Time Series and Systems.* (in Japanese).

Employment History

July 2000–June 2002
  Research Fellow, NEC Corporation, Japan.
July 2000–June 2002
  Principal Researcher, NEC Corporation, Japan.
Sept.1995–June 2000

Assistant Manager, NEC Corporation, Japan.
Aug.1992–Aug.1995.
Visiting Scientist, NEC Research Institute, Inc., NJ, U.S.A.
July 1992.
Assistant Manager, NEC Corporation, Japan.
Apr.1987–June 1992.

Researcher, NEC Corporation, Japan.

Research Interests

Theory: Computational Learning Theory, Information Theory, Statistical Inference, Computational Statistics,

Applications: Machine Learning, Data Mining (Anomaly Detection, Rule Induction), Text Mining (Text Classification, Topic Analysis).

Awards

2005. Advanced Technology Award -Fuji Sankei Business Eye Award
2004. Best Invention Award from NEC Corporation (Joint Work)
2003. Contribution Award from NEC Corporation.
2002. Contribution Award from NEC Corporation.
1999. Contribution Award from NEC Corporation.
1992. Contribution Award from NEC Corporation.
1991. Uenohara Award from NEC Corporation.
1991. Contribution Award from NEC Corporation.
1990. Best Paper Award from the Institute of Electronics, Information and Communication Engineers, Japan.
Paper: On New Asymptotic Performance Evaluation of Binary Modular Codes.

Memberships

IEEE Information Theory Society, IEICE(Institute of Electronics, Information, Communication, and Engineers), JSAI (Japanese Society of Artificial Intelligence), SITA(Society of Information Theory and Its Applications)

Publications

Refereed Journal Papers

1. K.Yamanishi: ``On Derivation of Good Codes Based on Elliptic Codes and Hyperelliptic Codes," (in Japanese)
    IEICE Transactions, A, vol.J71-A, no.10, p.1936-1946, Oct. 1988.

2. K.Yamanishi: ``On New Asymptotic Performance Evaluation of Binary Modular Codes,"(in Japanese)
    IEICE Transactions, A, vol. J71-A, no.12, p.2171-2181, Dec. 1988.   (Best Paper Award from IEICIE)

3. K.Yamanishi: ``On Construction and Performance Evaluation of Fermat Codes," (in Japanese)
    IEICE Transactions, A, vol. J72-A, no.3, p.597-607, Mar. 1989.

4. K.Yamanishi: ``A Learning Criterion for Stochastic Rules,"
    Machine Learning, vol.9, pp.165-203, 1992.

5. K.Yamanishi: ``Learning Non-parametric Densities in Terms of Finite-Dimensional Parametric Hypotheses,"
    IEICE Transactions, Inf.&Syst., vol.E75-D, no.4, July 1992.

6. K.Yamanishi: ``Probably Almost Discriminative Learning,"
    Machine Learning, vol.18, pp.23-50, 1995.

7. K.Yamanishi: ``A Loss Bound Model for On-line Stochastic Prediction Algorithms,"
    Information and Computation, vol.119, 1, pp.39-54, 1995.

8. H.Mamitsuka and K.Yamanishi: ``alpha-Helix Region Prediction with Stochastic Rule learning,"
    CABIOS, vol.11, no.4, p.399-411, 1995.

9. K.Yamanishi: ``On-line Maximum Likelihood Prediction with respect to General Loss Functions,"

Journal on Computer and System Sciences, 55, p.105-118, 1997.

10. K.Yamanishi: ``A Decision-theoretic Extension of Stochastic Complexity and Its Applications to Learning,"
    IEEE Transactions on Information Theory, vol.44, 4, p.1424-1439, 1998.

11. K.Yamanishi: ``Distributed Cooperative Bayesian Learning Strategies,"
    Information and Computation, vol.150, p.22-56, 1998.

12. H.Li and K.Yamanishi: ``Text Classification Using ESC-based Decision Lists,"
    Information Processing and Management, .Vol. 38/3, pp 343-361, March 2002.

13. H.Li and K.Yamanishi: ``Topic Analysis Using a Finite Mixture Model,"
    Information Processing and Management,. Vol.39/4, pp 521-541, 2003.

14. K.Yamanishi: and H.Li: ``Mining   Open Answers in Questionare Data,"
    IEEE Intelligent Systems. pp:58-63、 September/October, 2002.

15. K.Yamanishi, J.Takeuchi, G.Williamas, and P.Milne: ``On-line Unsupervised Oultlier Detection Using Finite Mixtures with Discounting Learning Algorithms,"
    Data Mining and Knowledge Discovery Journal, pp:275-300, May 2004, Volume 8, Issue 3.

Invited Journal Papers, Article

1. K.Yamanishi and T.Han: ``An Introduction to MDL: Information-theoretic View," (in Japanese)
   Journal of Japanese Society for Artificial Intelligence, p.427-434, vol 7(3), May 1992.

2. K.Yamanishi: ``An Introduction to MDL: Computational Learning-theoretic View," (in Japanese)
   Journal of Japanese Society for Artificial Intelligence, p.435-442, vol 7(3), May 1992.

3. K.Yamanishi: ``Stochastic Complexity and Learning Theory," (in Japanese)
   Operations Research, p.379-386, vol.41 (7), 1996.

4. K.Yamanishi: ``Data Compression and Learning," (in Japanese)

Journal of Japanese Society for Artificial Intelligence, p.204-215, vol.12 (2), 1997.

5. K.Yamanishi: ``Minimum Description Length Principle," (in Japanese)
    Journal of Japan Society for Fuzzy Theory and Systems, vol.10, No.1, p.43-50, 1998.

6. K.Yamanishi: ``Extended Stochastic Complexity and Its Applications to Learning," (in Japanese)
    Applied Mathematics, vol.8, No.3, p.14-29, 1998.

7. K.Yamanishi: ``Information Theory, Statistics, and Machine Learning," (in Japanese)
    Journal of the Society of Instrument and Control Engineers, vol.38, p.411-412, 1999.

8. K.Yamanishi: ``Statistical Model Selection and Machine Learning," (in Japanese)
    Journal of the Society of Instrument and Control Engineers, vol.38, p.420-426, 1999.

9. J.Takeuchi and K.Yamanishi: ``Statistical Outlier Detection in Data Mining," (in Japanese)
    Applied Mathematics, 2001

10. K.Yamanishi: ``Current Status and Survey of Information-Based Induction Sciences," (in Japanese)
    Journal of Information Processing, vol.42, No.1, pp:9--15, 2001.

11. K.Yamanishi: ``Data and Text Mining," (in Japanese)
    Journal of Computational Engineering, Oct. 2001.

12. N.Abe, K.Yamanishi,A.Nakamura, H.Mamitsuka, J.Takeuchi, and H.Li : ``Distributed and Active Learning,"
    The Foundations of Real-World Intelligence, Oct. 2001.

13. K.Yamanishi: ``Data and Text Mining," (in Japanese)
    in *Iwanami: Statistical Science Frontier Series.* Mar. 2003.

14. S.Morinaga and K.Yamanishi: ``Text Mining and Its Applications to Free Survey Data Analysis" (in Japanese)
    Journal of the Society of Instrument and Control Engineers. Vol.41, No.5, pp:354-357,2002.

15. K.Yamanishi: ``New Trend of Data and Text Mining-Outlier Detection and Reputation Mining' (in Japanese)
   Applied Mathematics. vol.12, No.4,p.7-22,2002.

16. K.Yamanishi : ``Extended Stochastic Complexity and Its Applications to Learning"
   to appear in *Advances in Minimum Description Length: Theory and Applications,* The MIT Press

17. K.Yamanishi, J.Takeuchi, Y.Matsunaga: "Security Mining"
   NEC Technical Journal, Special Issue on Security, vol.56, No.12, pp:41-45, NEC Corporation, 2003.

18. T.Egawa, M.Kobayashi, K.Yamanishi, A.Arutaki, J.Namiki: "Dynamic Collaboration from Scientists' Eyes,"
   Journal of Advanced Technology, pp:17-26, vol.1, No.1, 2004.

19. .K.Yamanishi, J.Takeuchi, Y.Maruyama: "Three Types of Statistical Anomaly Detection, "
   Information Processing, vol.46, No.1, pp:34-40, 2005

20. K.Yamanishi, J.Takeuchi, Y.Maruyama: "Data Mining for Security, "
   Journal of Advanced Technology、 Vol.2, No.1, pp:63-69, 2005.

21. K.Yamanishi and S.Morinaga: "Data Mining for Knowledge Organization,"
   Journal of Advanced Technology、 Vol.2, No. 2 , pp:129-136, 2005.

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1.K.Yamanishi: ``On New Asymptotic Performance Evaluation of Binary Modular Codes,"
   presented at *1988 IEEE International Symposium on Information Theory (ISIT88),* Kobe Japan, June 1988.

2. K.Yamanishi: ``Inferring Optimal Decision Lists from Stochastic Data Using the Minimum Description Length Criterion,"
   presented at *1990 IEEE International Symposium on Information Theory(ISIT90),* San

Diego, CA, Jan. 1990.

3. K.Yamanishi: ``A Learning Criterion for Stochastic Rules,''
   *Proceedings of the Third Annual Workshop on Computational Learning Theory
   (COLT90),* pp.67-81, Morgan Kaufmann, 1990.

4. K.Yamanishi and A.Konagaya: ``Learning Stochastic Motifs from Genetic Sequences,''
   Proceedings of the Eighth International Workshop on Machine Learning(ML91), pp.467-
   471, Morgan Kaufmann, 1991.

5. K.Yamanishi: ``A Loss Bound Model for On-Line Stochastic Prediction Strategies,''
   *Proceedings of the Fourth Annual Workshop on Computational Learning Theory
   (COLT91),* pp.290-302, Morgan Kaufmann, 1991.

6. A.Konagaya and K.Yamanishi: ``Stochastic Decision Predicates: A New Scheme to
   Represent Motifs,''
   presented at *AAAI Workshop on AI and Molecular Biology,* 1991.

7. K.Yamanishi: ``Learning Non-parametric Densities by Finite Dimensional Parametric
   Hypotheses,''
   Proceedings of the Second Annual Workshop on Algorithmic Learning Theory(ALT92),
   pp.175-186, JSAI Press, 1992.

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   *Proceedings of the Fifth Annual ACM Workshop on Computational Learning Theory
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9. H.Mamitsuka and K.Yamanishi: ``Protein Secondary Structure Prediction Based on
   Stochastic-Rule Learning,''
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12. K.Yamanishi: ``Learning Non-parametric Smooth Rules by Stochastic Rules with Finite
    Partitioning,''
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    Newbrunswick, NJ, 1994.

14. K.Yamanishi: ``The Minimum L-complexity Algorithm and Its Applications to Learning
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    to Prediction and Discrimination,''
    *Proceedings of the Eigth Annual Conference on Computational Learning Theory
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17. K.Yamanishi: "A Randomized Approximation of the MDL for Stochastic Models with
    Hidden Variables,"
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    *Proceedings of the Tenth Annual Conference on Computational Learning Theory
    (COLT97),* pp.250-262, ACM Press, 1997.

19. H.Li and K.Yamanishi: "Document Classification Using A Finite Mixture Model,"

Proceedings of the 35th Annual Meeting of the Association for Computational Linguistics (ACL97), p.39-47, Morgan Kaufmann, 1997.

20. K.Yamanishi: "Minimax Relative Sequence Analysis for Sequential Prediction Algorithms Using Parametric Hypotheses,"
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21. H.Li and K.Yamanishi: "Text Classification Using ESC-Based Decision Lists,"
Proceedings of International Conference on Information & Knowledge Management (CIKM99), pp.122-130, 1999.

22. K.Yamanishi: "Extended Stochastic Complexity in Individual Sequence Analysis,"
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23. H.Li and K.Yamanishi: "Text Classification Using ESC-Based Decision Lists,"(in Japanese)
Proceedings of the 1999 Workshop on Information-Based Induction Sciences(IBIS99), pp.239-244, 1999.

24. K.Yamanishi, J.Takeuchi, G.Williams, and P.Milne: "On-line Unsupervised Oultlier Detection Using Finite Mixtures with Discounting Learning Algorithms,"
in *Proceedings of the Sixth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining(KDD2000),* ACM Press, pp:320--324 2000.

25. K.Yamanishi and J.Takeuchi: "Statistical Outlier Detection Using On-line Discounting Learning Algorithms,"(in Japanese)
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26. H.Li and K.Yamanishi: "Statistical and Lexical Topic Analysis Using a Finite Mixture Model,"(in Japanese)
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Model,"
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28. K.Yamanishi and J.Takeuchi: "Discovering Outlier Filetering Rules From Unlabeled Data-
    --Combininig Supervised Learners with Unsupervised Learneres-,"
    *Proceedings of the Seventh ACM SIGKDD International Conference on Knowledge
    Discovery and Data Mining(KDD2001),* ACM Press, pp:389-394, 2001.

29. H.Li and K.Yamanishi: "Mining from Open Answers in Quessionare Data ,"
    *Proceedings of the Seventh ACM SIGKDD International Conference on Knowledge
    Discovery and Data Mining(KDD2001),* ACM Press, pp:443-449, 2001.

30. K.Yamanishi and J.Takeuchi: "Discovering Outlier Filetering Rules From Unlabeled
    Data," (in Japanese)
    *Proceedings of the 2001 Workshop on Information-Based Induction Sciences
    (IBIS2001),* pp:111-116, 2001.

31. H.Li and K.Yamanishi: "   A Statistical Approach to Analgzing Open Answers in
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    *Proceedings of the 2001 Workshop on Information-Based Induction Sciences
    (IBIS2001),* pp:129-134, 2001.

32. K.Yamanishi and J.Takeuchi: "A Unifying Approach to Detecting Outliers and Change-
    Points from Nonstationary Data,"
    *Proceedings of the Eighth ACM SIGKDD International Conference on Knowledge
    Discovery and Data Mining(KDD2002),* ACM Press, 2002.

33. S.Morinaga, K.Yamanishi, K.Tateishi, and T.Fukushima: "Mining Product Reputations on
    the Web,"
    *Proceedings of the Eighth ACM SIGKDD International Conference on Knowledge
    Discovery and Data Mining(KDD2002),* ACM Press, 2002.

34. J.Takeuchi and K.Yamanishi: "A Unifying Approach to Detecting Outliers and Change
    Ponts Using Discounting Learning Algorithms," (in Japanese)
    *Proceedings of the 2002 Workshop on Information-Based Induction Sciences
    (IBIS2002),* 2002.

35. S.Morinaga, K.Yamanishi, J.Takeuchi: "Distributed Cooperative Mining from Different Information Sources,"(in Japanese)
Proceedings of the 2002 Workshop on Information-Based Induction Sciences (IBIS2002), 2002.

36. S.Morinaga, K.Yamanishi, J.Takeuchi: "Distributed Cooperative Mining for Information Consortia, "
Proceedings of the Ninth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining(KDD2003), ACM Press, 2003.

37. Y.Matsunaga and K.Yamanishi: "An Information-theoretic Approach to Detecting Anomalous Behaviors," (in Japanese)
Proceedings of the Second Forum on Information Technologies (FIT2003), 2003.

38. Y.Matsunaga and K.Yamanishi: "Dynamic Model Selection and Its Applications to Anomalous Behavior Detection,"(in Japanese)
Proceedings of the 2003 Workshop on Information-Based Induction Sciences (IBIS2003), 2003.

39. S.Morinaga and K.Yamanishi: "Tracking Dynamics of Topic Trends Using a Finite Mixture Model,"(in Japanese)
Proceedings of the Tenth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD2004), ACM Press, 2004.

40. Y.Maruyama and K.Yamanishi: "Dynamic Model Selection with Its Applications to Computer Security,"
Proceedings of 2004 IEEE International Workshop on Information Theory, 2004.

41. Y.Maruyama and K.Yamanishi: "Dynamic Model Selection with Its Applications to Computer Security," (in Japanese)
Proceedings of the 2004 Workshop on Information-Based Induction Sciences (IBIS2004), pp:15-22, 2003.

42. S.Morinaga and K.Yamanishi: "Mining Dynamics of Topic Trends Using a Finite Mixture Model,"(in Japanese)
Proceedings of the 2004 Workshop on Information-Based Induction Sciences (IBIS2004), pp:78-85, 2004.

43. K.Yamanishi and Y.Maruyama: "Dynamic Model Selection for Network Failure Monitoring," to appear in
Proceedings of the Eleventh ACM SIGKDD International Conference on Knowledge Discovery and Data Mining
(KDD2005), ACM Press, 2005.

Invited Conference Papers

1. K.Yamanishi: ``On New Asymptotic Performance Evaluation of Binary Modular Codes," *Proceedings of Workshop on Coding Theory,* Osaka Japan, June 1988.

2. K.Yamanishi: ``Computational Learning Theory and the MDL Principle," (in Japanese) *Proceedings of Information Theory and Its Applications Workshop,* p.55-58, 1991.

3. K.Yamanishi: ``Why does the MDL give an effective learning strategy?" (in Japanese) *Proceedings of the 5th Annual Conference for JSAI,* p.77-80, June 1991.

4. K.Yamanishi: ``A Statistical Approach to Computational Learning Theory," *Proceedings of the Third NEC Research Symposium,* pp.238-276, SIAM, 1992.

5. K.Yamanishi: ``On Complexity of MDL Learning and Discrimination," *Proceedings of 1993 IEEE Information Theory Workshop,* p.30-31, 1993.

6. K.Yamanishi: ``Generalized Stochastic Complexity and Its Applications to Learning," *Proceedings of the 1994 Conference on Information Science and Systems,* vol.2, pp.763-768, 1994.

7. K.Yamanishi: ``A Decision-theoretic Extension of Stochastic Complexity and Its Applications to Learning,"(in Japanese) *Proceedings of the 1998 Workshop on Information-Based Induction Sciences,* pp.33-41, 1998.

8. K.Yamanishi: ``From MDL criterion to Extended Stochastic Complexity," (in Japanese)

Proceedings of IEICE (Institute of Electronics, Information, Communication, and Engineers), 1998.

9. K.Yamanishi: ``Extended Stochastic Complexity and Minimax Relative Loss Analysis,'' *Algorithmic Learning Theory: The Tenth International Conference, ALT'99, Proceedings,* pp.26--38, 1999.

10. K.Yamanishi: ``Information-Based Induction Sciences--Trends and Related Topics,'' (in Japanese)
Proceedings of Symposium of the Institute on System, Control, and Information Engineers, pp:17-24, May 2000.

11.K.Yamanishi and J.Takeuchi: ``Data Mining and Business HPC,'' (in Japanese)
Proceedings of NEC/HPC Workshop, Tokyo Japan, Dec. 2000.

12. K.Yamanishi: ``Data and Text Mining Based on Information-Based Induction Sciences,'' (in Japanese)
Proceedings of Workshop on AI Fundamentals, Hokuriku, Japan, Mar. 2001.

13. K.Yamanishi: ``Text Mining Using Stochastic Modeling of Text Data,'' (in Japanese)
Proceedings of Workshop on AI Symposium, Tokyo, Japan, July 2001.

14. K.Yamanishi: ``Web Mining and Information-Based Induction Sciences,'' (in Japanese)
Proceedings of Information Science Symposium, Japan, January 2002.

15. K.Yamanishi and J.Takeuchi: "Anomaly Detection by Data Mining and Its Applications to Network Intrusion Detection," (in Japanese)
Proceedings of IEICE Information Network Research Group. Japan, June, 2002.

16 .K.Yamanishi: "Web Mining and Information-Based Induction Sciences-Reputation Mining and Log Mining, "(in Japanese)
Proceedings of Information-Based Induction Sciences(IBIS2002), Japan, September, 2002.

17 .K.Yamanishi: "Detecting Anomalies and Change-points for Cyber Threat Analysis, "
Proceedings of IEEE Workshop on Data Mining for Cyber Threat Analysis, Japan, December, 2002.

18 .K.Yamanishi: "Data Mining Realizing Security/Web Intelligence, " (in Japanese)
Proceedings of AI Symposium, JSAI, pp:99-104, Japan, April, 2002.

19. K.Yamanishi: "Data Mining and Security, "(in Japanese)
Proceedings of the 17th Annual Conference on JSAI, Japan, June, 2002.

20. K.Yamanishi: "Text Mining, " (in Japanese)
Proceedings of the Second Forum on Information Technologies (FIT2003) , 2003.

21.K.Yamanishi: "Text Mining and NLP Business, "(in Japanese)
Proceedings of 2003 JEITA Symposium on Natural Language Processing-NLP Business, 2003.

22.K.Yamanishi: "Data Mining based Security Technologies," (in Japanese)
Proceedings of Artificial Intelligence Seminar-Computer Security and AI-, 2005.

Other Invited Talks

1.
``Algebraic-Geometric Codes,"
presented for Seminar at Yokohama National University (hosted by Prof.H.Imai),
Kanagawa Japan, Feb. 1987.

2. ``Algebraic-Geometric Codes,"
presented at *Workshop on Combinatorial Theory and Its Applications,* Tsukuba Japan,
July 1987.

3. ``Algebraic-Geometric Codes,"
presented for Seminar at Electro-Communication University (hosted by
Prof.H.Mizuno), Tokyo Japan, Nov. 1987.

4. ``A Theory of Learning Stochastic Rules,"
presented for Seminar at University of Tokyo (hosted by Prof.S.Amari), Tokyo Japan,
July 1991.

5. ``Learning Based on the MDL Principle,"
presented for Seminar at IBM Almaden Research Center (hosted by J.Rissanen), CA,

U.S.A., July 1991.

6. ``Learning Theory and the MDL Principle,"
   presented at *Workshop on Pattern Recognition,* University of Tokyo, Tokyo Japan, Feb. 1992.

7. ``Universal Discrimination Using the MDL Principle,"
   presented for Seminar at Electro-Communication University (hosted by Prof.H.Morita), Tokyo Japan, July 1992.

8. ``The Minimum L-Complexity Algorithm and Its Applications to Learning,"
   presented for Seminar at AT&T Bell Laboratories, Murray Hills (hosted by Y.Freund), NJ U.S.A., Feb. 1994.

9. "A Decision-theoretic Extension of Stochastic Complexity and Its Applications to Learning,"
   presented for Seminar at University of Tokyo (hosted by Prof.K.Hayami), Tokyo Japan, Feb. 1996.

10. "A Decision-theoretic Extension of Stochastic Complexity and Its Applications to Learning,"
    presented for Seminar at University of Tokyo (hosted by Prof.Tsujii), Tokyo Japan, October 1997.

11. "Informatin-Based Induction Sciences,"
    presented at *Workshop on Mathematical Engineering Methods for Statistical Information Processing,* The Institute of Statist. Math., January 1998.

12. "Extended Stochastic Complexity and Learning Theory,"
    presented for Seminar at Waseda University (hosted by Prof.Matsushima), Tokyo Japan, May 1998.

13. "Extended Stochastic Complexity and Learning Theory,"
    presented for Seminar at Electro-Communication University (hosted by Prof. Te-sun Han), Tokyo Japan, December 1998.

14. "Extended Stochastic Complexity and Machine Learning,"

presented for Seminar at University of Tokyo (hosted by Prof.Yamamoto), Tokyo Japan, May 1999.

15. "Information Mining--Fraud Detection and Text Mining,"
presented at *Statistical Sciences and Data Mining,* The Institute of Statist. Math., Tokyo Japan, October 1999.

16. "On-line Unsupervised Outlier Detection Using Finite Mixture Models,"
presented at *Toward a New Unification of Statistical Sciences, Neural Networks, and Data Mining,* The Institute of Statist. Math., Tokyo Japan, Nov. 2000.

17. "Latest Data Mining Technologies with Their Applications to CRM,"
presented at Datawarehouse and CRM Expo. Tutorial Seminar, Tokyo Japan, June 2001.

18. "Web Mining,"
presented at JEITA Research Seminar, June 2003.

19. "Data Mining-Toward Security Intelligence and Knowledge Organization,"
presented at Tsukuba University, July 2004.

Note: The list here does not include any papers published without being reviewed, except invited papers. Please contact me directly if you wish to look at them.

Professional Activities

Lecturer

1. A Special Lecture at Graduate School at Universtiy of Tokyo from Nov.2000 to Feb.2001.

Committees

1. Member of COLT (Computational Learning Theory) Working Group since 1994.

2. Program committee member on COLT'93 (ACM Conference on Computational Learning Theory), 1993.

3. Program committee member on ML'94 (International Conference on Machine Learning), 1994.

4. Program committee member on EuroCOLT'95 (European Conference on Computational Learning Theory), 1995.

5. Program committee member on ML'95 (International Conference on Machine Learning), 1995.

6. Program committee member on WCNN'95 (World Conference on Neural Networks), 1995.

7. Program committee member on ALT'96 (Workshop on Algorithmic Learning Theory), 1996.

8. Advisory committee member on COLT'97 (International Conderence on Computational Learning Theory), 1997.

9. Chair of 1998 Workshop on IBIS'98 (Information-Based Induction Sciences), 1998.

10. Committee member on Information Theory Society of IEICE (Institute of Electronics, Information, Communication, and Engineers).

11. Program committee member on COLT'99 (ACM Conference on Computational Learning Theory), 1999.

12. Editor of Special Issue of Information Theory, Statistical Methods, and Machine Learning in SICE (Society of Instrument and Control Engineers), 1999.

13. Program chair on IBIS'99 (Information-Based Induction Sciences), 1999.

14. Editor of Special Issue of Information-Based Induction Sciences in IEICE (Institute of Electronics, Information, Communication, and Engineers), 1999.

15. Program committee member on IBIS 2000 (Information-Based Induction Sciences), 2000.

16. Program committee member on Special Issue of Information-Based Induction Sciences in Journal of Japanese Society of Artificial Intelligence, 2000

17. Chair of Time-Limited Research Committee on Information-Based Induction Sciences, IEICE (Institute of Electronics, Information, Communication, and Engineers), Information Systems Society, 2001--2003.

18. Program committee member on IBIS 2001 (Information-Based Induction Sciences), 2001.

19. Member on Editorial Boad on Special Issue of Information-Based Induction Sciences in IEICE (Institute of Electronics, Information, Communication, and Engineers), 2001.

20. Member on Editorial Boad, Fundamentals in IEICE (Institute of Electronics, Information, Communication, and Engineers), 2001-

21. Member on Society Editorial Boad, Information Systems in IEICE (Institute of Electronics, Information, Communication, and Engineers), 2001-.

22. Member on Editorial Boad on Program on Special Issue of Information-Based Induction Sciences in IEICE (Institute of Electronics, Information, Communication, and Engineers), 2002.

23. Program committee member on IBIS 2002 (Information-Based Induction Sciences), 2002.

24. Program committee member on DS' 02 (Conference on Discovery Science), 2002.

25. FIT(Forum on Information Technologies) Program committee member on FIT 2002.

26. Program committee member on OTC-03 (3rd Workshop on Operational Text Classification), 2003

27. Member on Editorial Boad on Program on Special Issue of Information-Based Induction Sciences in IEICE (Institute of Electronics, Information, Communication, and Engineers), 2004.

28. Co-Chair on IJCNLP2004   (First International Conference on Natural Language Processing), 2004.

29. Program committee member on KDD2004 (ACM Conference on Knowledge Discovery and Data Mining).

30. Chair on 2004 IBIS'04 (Information-Based Induction Sciences) , 2004.

31. Program committee member on IJCAI2005.

32. Program committee member on ALT2005

33. Program committee member on KDD2005

34. Steering Committee member on Society on Information Theory and Its Applications, JAPAN.

Referee for Journal Submission

- IEEE Transactions on Information Theory.

- IEEE Transactions on Neural Networks.

- Journal of Computer and System Sciences.

- Information and Computation.

- SIAM Journal on Computing.

- Machine Learning.

- Theoretical Computer Science.

- Information Processing Letters.

- IEICE (The Institute of Electronics, Information and Communication Engineers) Transactions.

- Journal of Japan Society for Fuzzy Theory and Systems

- Journal of Japan Society for Artificial Intelligence

Tenure/Dissertation Committees

- Vijay Ragavan--Promoted to Associate Professor with tenure in Vanderbilt University, 1995.

- Peter Grunwald--Received Ph.D with the paper "The Minimum Description Length Principle and Reasoning Under Uncertainty"

  from Universiteit van Amsterdam, 1999.